

CLAIMS

1. (Currently Amended)

A cyclic swashplate device to control the pitch

of rotorcraft rotor (1) blades (2), such as a main helicopter rotor, a rotor (1) on which each blade (2) is, on the one hand, driven in rotation about an axis of rotation (Z-Z), of a rotor (1) shaft (3) through a hub (4) integral in rotation with shaft (3), and on the other hand, integral in rotation about a longitudinal pitch change axis (A-A) of blade (2) of at least one pitch lever (5) controlled by a corresponding pitch connecting rod (6), said device (10') being of the type with two annular and coaxial disks (12', 14') enclosing rotor (1) axis (Z-Z) and mounted on an axial and tilting translation guide mechanism (11') of said disks with respect to rotor axis (Z-Z), and of which one is a rotating disk (12') connected, on the one hand to said hub (4) and/or said shaft (3) by at least one device driving (13) the rotating disk (12') to rotate with rotor (1) about its axis (Z-Z) and, on the one hand, each blade (2) by the corresponding pitch connecting rod (6), said rotating disk (12') being mounted in rotation by at least one bearing (21') on the other disk, which is a non-rotating disk (14') connected, on the one hand, to the structure (15) of said rotorcraft by at least one retaining device (16) immobilizing said non-rotating disk (14') in rotation about said rotor axis (Z-Z), and on the other, pilot control devices (17) soliciting the non-rotating disk (14') in such a way that the axial and/or tilting translation movements imposed on the non-rotating disk (14') from the pilot controls (17) are followed by the rotating disk (12'), which transmits the pitch to be set on the rotor (1) blades (2) by means of pitch connecting rods (6), with said rotating disk (12') comprising a modular set of interconnecting fittings (46) attached rigidly (45) and removably to an annular device (31') to ensure links between this rotating disk and the pitch connecting rods (6) and/or said at least one driving device (13),

characterized in that said non-rotating disk (14') includes a modular set of link fittings (42) attached rigidly (41) and removably to an annular device (30') to ensure the links between this non-rotating disk and the pilot control devices (17) and/or said at least one retaining device (16).

2. (Currently Amended) Cyclic swashplate device according to claim

5 1, characterized in that said modular assembly of fittings linking said non-rotating disk (14') includes the first non-rotating link fittings (42) identical to one another in equal numbers to said pilot control devices (17), and of which each connects said non-rotating disk (14') to respectively one of said pilot control devices (17), and/or said modular set of link fittings of said rotating disk (12') includes the first rotating link fittings (46) identical to one another in equal numbers
10 to said pitch connecting rods (6), and each of which connects said rotating disk (12') to respectively one of the pitch connecting rods (6).

3. (Currently Amended) Cyclic swashplate device according to claim

2, characterized in that said modular set of link fittings to said non-rotating disk (14') includes at least one second non-rotating link fitting in equal numbers to at least one said retaining device
15 (16) to connect said non-rotating disk (14') to at least one retaining device (16), and/or said modular set of link fittings to said rotating disk (12') including at least a second rotating link fitting (49) in numbers equal to at least one driving device (13) to connect said rotating disk (12') to at least one said driving device (13).

4. (Currently Amended) Cyclic swashplate device according to claim

20 3, characterized in that said annular device of at least one of disks (14', 12') comprises respectively one of internal rings (30') and external rings (31') of the rotary assembly of rotating disk (12') on non-rotating disk (14).

5. (Currently Amended)

Cyclic swashplate device according to claim

4, characterized in that said annular device comprising at least one disk (12', 14') is an intermediate ring, force-fitted with one of internal rings (30') and external rings (31') of said bearing (21').

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6. (Currently Amended)

Cyclic swashplate device according to claim

5, characterized in that the link fittings (42, 46-49) of a same disk (14', 12') are attached to said annular device (30', 31') of said disk by means of a collar (40, 41) integral with said annular device (30', 31') and to which said link fittings (42, 46-49) are each fitted separably.

7. (Currently Amended)

Cyclic swashplate device according to claim

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6, characterized in that each link fitting (42, 46-49) of a modular set is bolted (41, 45) onto corresponding collar (40, 44).

8. (Currently Amended)

Cyclic swashplate device according to claim

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7, characterized in that each interconnecting fitting (42, 46-49) has a plane shape that is more or less triangular with one side forming a concave circle arc arranged as an attaching base to part of the perimeter of said corresponding annular device or said corresponding collar (40, 44), while the apex opposite said concave side is arranged to form a yoke (43, 47) or an end-fitting accommodating a swivel end of a pitch connecting rod (6) or a pilot control device (17) or driving device (13) or retaining device (16) corresponding to it.

9. (Currently Amended)

Cyclic swashplate device according to claim

8, characterized in that ring (31') of bearing (21'), which is linked in rotation with the rotating disk (12'), is integral with an upper collar (44) protruding more or less radially towards the outside of bearing (21') from the upper axial end of said ring (31') linked with the rotating disk (12') and with respect to rotor axis (Z-Z), whereas the other bearing (21') ring (30') linked with the non-rotating disk (14') is integral with a lower collar (40) protruding more or less radially toward the outside of bearing (21') from the lower axial end of said other ring (30') linked with non-rotating disk (14').

10. (Currently Amended)

Cyclic swashplate device according to claim

9, characterized in that each pilot control device (17) is connected by a swivel-mounted link to respectively one of said first non-rotating link fittings (42) attached removably to said lower collar (40) and/or each pitch connecting rod (6), connected by a swivel-mounted link to respectively one of the first rotating link fittings (46) attached removably to said upper collar (44).

11. (Currently Amended)

Cyclic swashplate device according to claim

10, characterized in that at least one of said retaining devices (18) is connected by a swivel-mounted link to a second non-rotating link fitting respectively attached removably to said lower collar (40) and/or at least one said driving device (13) is connected by a swivel-mounted link to a second rotating link fitting (49) respectively attached removably to said upper collar (44).

12. (Currently Amended) Cyclic swashplate device according to claim 11, characterized in that the interconnecting fittings (42, 46-49) of at least one modular set are made of aluminum alloy or of a composite material using an aluminum or titanium metal matrix from forged or dye-punched blanks or plates.

5 13. (Currently Amended) Cyclic swashplate device according to claim 12, characterized in that one (30') of bearing rings (21'), integral with one of the two non-rotating disks (14') and rotating disks (12') connected to said translation and tilting guide mechanism (11') is subdivided into two half-rings (30'a, 30'b) placed axially end to end, and each of which is provided respectively with two adjacent radial collars (50a, 50b), clamped (39)
10 endwise against one another to ensure the pre-stressing of bearing (21') and to which said star (14') is attached to said translation and tilting guide mechanism (11').

14. (Currently Amended) Device according to claim 13, characterized in that the said translation and tilting guide mechanism (11') includes a central swivel (18'), centered on rotor axis Z-Z) on which the non-rotating disk (14') is assembled to oscillate by at
15 least one plate (19') with a spherical cap bearing surface, with said swivel (18') being mounted to slide parallel to the rotor axis (Z-Z) about which cylindrical guide (20') coaxial with rotor axis (Z-Z) and not rotating about said rotor axis (Z-Z) and preferably attached with respect to the structure (15) of the rotorcraft.

15. (Currently Amended) A device according to claim 13, characterized
20 in that said translation and tilting guiding mechanism includes a universal joint link, with a universal joint ring (51) mounted so as to pivot on the one hand about a first diametrical axis, perpendicular to the rotor axis (Z-Z) by two swiveling links (54) mounted coaxially on two sides

(55) each guided in axial translation on respectively one of the two guide columns parallel to the rotor axis (Z-Z) and symmetrical with respect to one another compared to said axis (Z-Z), in the same diametrical plane passing through the latter and, on the other hand, about a second diametrical axis, perpendicular to the first diametrical axis, by two swiveling links (53) with trunnions (52), that are coaxial and diametrically opposed, connecting the universal joint ring (51) to the ring (14') of the two non-rotating (14') and rotating (12') disks, connected to said translation and tilting guiding mechanism.

16. (Currently Amended) Cyclic swashplate device according to claim 2 characterized in that said annular device of at least one of disks (14', 12') comprises respectively one of internal rings (30') and external rings (31') of the rotary assembly of rotating disk (12') on non-rotating disk (14).

17. (Currently Amended) Cyclic swashplate device according to claim 1, characterized in that said annular device comprising at least one disk (12', 14') is an intermediate ring, force-fitted with one of internal rings (30') and external rings (31') of said bearing (21').

18. (Currently Amended) Cyclic swashplate device according to claim 1, characterized in that the link fittings (42, 46-49) of a same disk (14', 12') are attached to said annular device (30', 31') of said disk by means of a collar (40, 41) integral with said annular device (30', 31') and to which said link fittings (42, 46-49) are each fitted separably.

19. (Currently Amended) Cyclic swashplate device according to claim 1, characterized in that each interconnecting fitting (42, 46-49) has a plane shape that is more or less triangular with one side forming a concave circle arc arranged as an attaching base to part

of the perimeter of said corresponding annular device or said corresponding collar (40, 44), while the apex opposite said concave side is arranged to form a yoke (43, 47) or an end-fitting accommodating a swivel end of a pitch connecting rod (6) or a pilot control device (17) or driving device (13) or retaining device (16) corresponding to it.

5 20. (Currently Amended) A cyclic swashplate device to control the pitch of rotorcraft rotor blades, such as a main helicopter rotor, a rotor on which each blade is, on the one hand, driven in rotation about an axis of rotation (Z-Z), of a rotor shaft through a hub integral in rotation with shaft, and on the other hand, integral in rotation about a longitudinal pitch change axis (A-A) of blade of at least one pitch lever controlled by a corresponding pitch
10 connecting rod, said device being of the type with two annular and coaxial disks enclosing rotor axis (Z-Z) and mounted on an axial and tilting translation guide mechanism of said disks with respect to rotor axis (Z-Z), and of which one is a rotating star connected, on the one hand to said hub and/or said shaft by at least one device driving the rotating disk to rotate with said rotor about its axis (Z-Z) and, on the one hand, each blade by the corresponding pitch connecting rod,
15 said rotating disk being mounted in rotation by at least one bearing on the other disk, which is a non-rotating disk connected, on the one hand, to the structure of said rotorcraft by at least one retaining device immobilizing said non-rotating disk in rotation about said rotor axis (Z-Z), and on the other, pilot control devices which control the non-rotating disk in such a way that the axial and/or tilting translation movements imposed on the non-rotating disk from the pilot
20 controls are followed by the rotating disk, which transmits the pitch to be set on the rotor blades by means of pitch connecting rods, with said rotating disk comprising a modular set of interconnecting fittings attached rigidly and removably to an annular device to ensure links

between the rotating disk and the pitch connecting rods and/or said at least one driving device, characterized in that said non-rotating star includes a modular set of link fittings attached rigidly and removably to an annular device to ensure the links between this non-rotating disk and the pilot control devices and/or said at least one retaining device.